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RESEARCH ARTICLE

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Price development in Albania

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Abstract

Even though inflation has been low in the last years in Albania and inside the target rate of about 3 percent determined by Bank of Albania, considering the relevance of this variable for economic activity there is room for careful analysis in order to make evident the potential threatens of domestic price stability. The main objective of this paper is twofold, first analyzing sub-indexes of CPI basket in order to determine the major volatile components, and second aim is to qualify the relative importance of different transmission mechanisms of monetary policy, by using VAR approach.

The main finding of this work is that rent fuel and power that constitute the second large sub-indexes of CPI with the weight 24 percent have been the most volatile categories for time period 2000–2008, followed by food sub-index that has the highest weight in Albania CPI basket of about 43 percent. Econometric model has found evidence that money supply is important determinant factor for domestic inflation. There is an immediate response of inflation to shocks in the exchange rate. Even though the exchange rate continues to be an important variable for explaining inflation in Albania, with the development of financial market its importance will decrease. Total loans to GDP ratio in Albania have increased substantially in the last year, and we believe that the importance of lending channel will further increase in Albania with the development of financial market.

Keywords

Monetary policy · monetary transmission mechanism · VAR

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1 Introduction

The main objective of Monetary Policy in Albania is achieving and maintaining price stability. In quantitative terms with price stability is intended keeping inflation in the level of 3 percent, with the band ± 1 percent. Bank of Albania use monetary aggregates as the main indicators of inflationary pressures to economy. Annual increase of monetary aggregate M3, is intermediate objective based on the fact that inflation is monetary phenomenon. In accordance with increasing the competition in banking system, central bank is considering the developments in interest rates. Even though they are not operational objectives for central bank, are an indicator of money stance in the economy and an important determinant of economic development.

In the last years inflation in Albania has been low, stable and within the band determined by Central Bank. Even though there have been few cases that the monthly average inflation rate was above the upper limit, for this reason the analyze of inflation in this paper starts with assessing of different sub-indexes into CPI basket that are more volatile and are driving inflation development. This sub-indexes basically are influenced by the factors that are not results of monetary policy action, such as administrated prices of energy that have had substantial increase for time period under survey, and will continue to increase in the near future, or changes on prices of basic food in global market. Based on the large part of food sub-indexes in Albania CPI basket their influence is expected to be large and significant.

The monetary policy transmission mechanisms in inflation are analyzed on the second part. First it is done a qualitative assessment of individual channels of monetary transmission by providing evidence from Albanian experience. The rationale behind this assessment is the fact that Albania is a transition economy, which has adopted many reforms which have influenced monetary policy channel, and therefore the transmission channels could change in time their weight and significance. In the last part of this paper by using Autoregressive VAR model is assessed the importance of different monetary policy transmission mechanisms.

2 Price development and CPI

The CPI basket in Albania is divided in 12 main categories according to COICOP classification. The main part of CPI is food and nonalcoholic beverages, with about 43 percent of total family budget, followed by rent, water, fuel and power that accounts for about 24 percent of total family budget, and transportation, furniture and maintenance groups that have respectively 5 percent of family budget. In year 2008 has been an important increase in total average CPI index of about 3.3 percent relative to the previous year. This increase is mostly attributed to increase in food prices with about 2.2 percent, rent, water, fuel and power with about 0.9 percent.

In order to identify which categories of sub-indexes of CPI are the major component driving the inflation development in Table 1 is represented the CPI Albania basket decomposition in 12 sub-indexes, the weight of each sub-index relative to total CPI and the standard deviation.

From the data reported on the above table food and non alcoholic beverages together with rent, water, fuel and power are the two main sub-indexes that have driving inflation in Albania. For the whole sample food category has the highest standard deviation and seems to be the main sub-index driving inflation in Albania. Taking into consideration the fact that in early stage of transition process Albania faced with price liberalization it is expected that this category to be more volatile in early stages of transition process relative to time period after 2000. For this reason is calculated the standard deviation for each sub-indexes for time period 2000–2008. From this time period rent, water, fuel and power have been the major sub-index driving inflation followed by food sub-index. In the third place is hotels, café and restaurants category that represents the total consumption outside the house, followed by transportation. In other empirical done for the overall inflation in South –Eastern Europe such as Herrmann and Polgar 2007 [14], have concluded that the sub-indexes housing/energy appears to be the main driving force of overall inflation. Zoli 2009 [40], due to a large share of food in consumption basket on average, food price inflation led to an increase in headline inflation of almost 6% point during 2007Q2-2008Q2, while oil price inflation have added about 2% point.

3 The transmission mechanism channels evidence of Albania economy

Theoretically is expected that in countries in transition, like Albania where are implemented many structural and institutional reforms, the influence of different channels of monetary policy also to change in time. Therefore the monetary transmission and factors that affect it should be continuously analyzed. For this reason below it is done an assessment of performance of individual channels of monetary policy in Albania.

3.1 The interest rate channel

In the less developed financial system interest rate channel is expected to play little role. Loayza and Schmidt-Hebbel 2001 [23], Sinclair 2003 [36] and Dabla-Norris and Floerkemeier 2006 [9], have found limit capacity of monetary policy to influence economic activity because in transition countries financial system is underdeveloped and banking competition is low.

Before September 2000, the Central Bank of Albania used the direct instrument of monetary control. From September 2000 the main operational instrument of monetary policy in Albania has been Repo rate[1] that reflects the changes in the direction of monetary policy. The changes in official interest rate are transmitted into the bank deposit rate and loan interest rate, which constitutes the first stage of transmission process. In the second stage, the aggregate demand responds to changes in real interest rate by bringing changes in output and prices.

The interest rate channel of monetary policy is effective, if monetary policy actions affect interest rates that cause individual and business to alter their spending decisions.

The deposits rate of three months, six months and 12 months for the time period under survey have moved in the same line with policy interest rate with the exception of time period from 2005M5 -2005M11. For unchanged official interest rate during this period is noticed a significance decrease in all maturity deposit interest rate, that lasted for about two months and was followed by a sharp increase in all maturity deposit interest rate which were stabilized by the end of year 2005 and thereafter moved in the same line with official interest rate. In June 2005 in Albania were political elections for the new parliament. The prolong post election situation, energy crises and the increase of fuel price have affected in decreasing of the GDP growth in this period. These factors are found to be responsible for volatility of liquidity in banking system during the second half year (see Bank of Albania annual report).

The lending rate of all maturities does not seem to move in the same line with official interest rate. In economic literature the main determinants of loan rate are classified in three categories: bank specific factors, industry specific factors and macroeconomic factors. The last factor is excluded because of stable macroeconomic environment that Albania has been able to maintain in the recent year, this should have made easier the interest rate pass through. In the market specific factors highlighted in the literature is the lack of competition in the banking sector. From the studies that are done about competition in Albania banking system by Bank of Albania is concluded that competition is not low but at average levels.

Most of the credit given by commercial banks in Albania are in foreign currency denominated, therefore it is expected that their rate to be determined in international market, and not to respond to policy actions of Bank of Albania. In year 2008 about 59% of credit to individuals is in foreign currency, from which 95.2% in euro and only 4.1% in US dollar. In total credit to

[1] The Bank of Albania main instrument to transmit monetary policy signals is the interest rates applied in the one week repurchase and reverse repurchase agreement. The interest rate applied by Central Bank in these transactions is supposed to play the role of core interest rate in economy.

Tab. 1. Standard deviation for sub-indexes of CPI basket. Source: INSTAT data base

	Weight	Standard Deviation 1995–2008	Standard Deviation 2000-2008
Food and non alcoholic beverages	0.43	7.26	2.56
Alcoholic beverages and tobacco	0.03	0.46	0.24
Clothing and footwear	0.04	0.70	0.40
Rent, water, fuel and power	0.24	5.73	3.22
Furniture household goods maintenance	0.05	0.62	0.20
Medical care	0.02	0.39	0.17
Transportation	0.05	0.85	0.32
Communication	0.01	0.10	0.10
Recreation and culture	0.03	0.28	0.10
Education service	0.01	0.22	0.17
Hotels, coffee-house and restaurants	0.07	1.24	0.51
Goods and different services	0.02	0.33	0.00

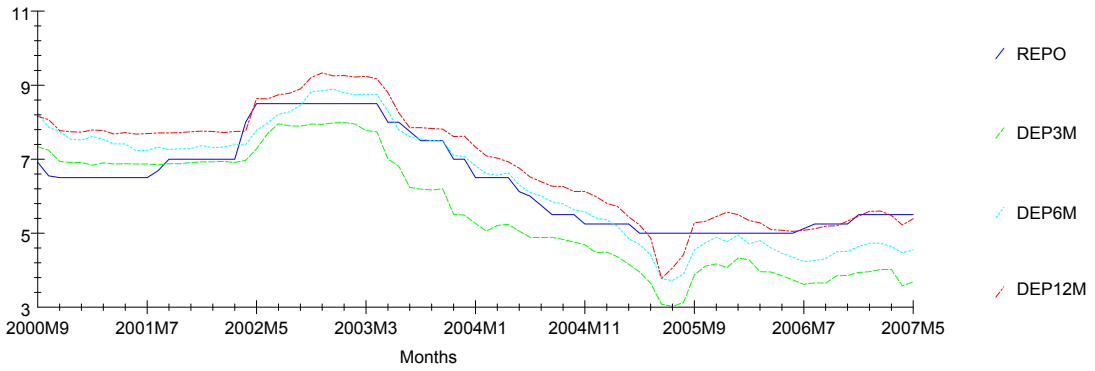


Fig. 1. Policy interest rate and deposits interest rate

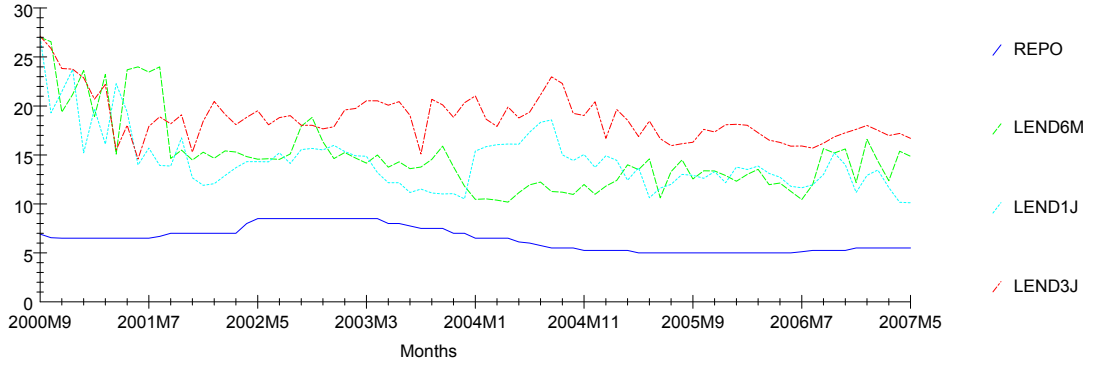


Fig. 2. Policy interest rate and lending rate

business sector 79.8% is in foreign currency, from which about 86.4% is in euro and only 12.2% in US dollar.

Vika (2007, [37]) studied the role of banks lending in the monetary transmission in Albania. By using quarterly individual data of twelve commercial banks, for a short time period 2004Q1 -2006Q4, he found evidence of modest effectiveness of bank lending channel in Albania.

In order to create a complete overview of financial situation in Albania, in Table 2 are represented some indicators, which are considered to be close related with the performance of interest rate channel of monetary transmission mechanism.

From the data reported in Table 2 it is noticed that the degree of monetization in Albania is high. Theoretically countries that have higher per capita income are expected to have higher monetization (see [41, p 67]). In his book by analyzing the demand for money and monetization in transition economies have concluded that Albania could be treated as a high-monetization country, is a unique case of low income country with relatively high demand for money, low inflation and real GDP growth.

Total deposit to GDP ratio is increasing in time, but could be easily noticed the deep discordance with loan to GDP ratio for the same time period. The developments of the last year are promising. The total loan to economy has a steady increase, and loan to private sector makes the most important part of total loans, in the year 2008 the ratio of credit to private sector relative to GDP was about 25 percent relatively to 20 percent of GDP in the previous years. The intermediation level of second level banks has increased significantly, from about 6.4 percent that was the ratio of loans relative to total deposits in year 2000, has increased at about 43 percent in year 2008.

The dollarization index is measured as a ratio of foreign currency deposits to broad money. These indicators show for a high level of dollarization of Albania economy, which is expected to impact negatively the performance of domestic monetary policy.

3.2 Bank lending channel

Bank lending channel operates through the influence that monetary policy has on the supply of bank loans. Tightening of monetary policy will reduce the bank reserves and therefore the supply of credit. This will bring reduction in consumption spending and investment by bank dependent borrowers. In order for credit channel to be effective investments should not have other alternative of financing than borrowing from banks.

In the empirical studies done for the effectiveness of this channel of transmission of monetary policy the results have been mixed. Brooks (2007) [42] and (Bajec and Lambsdorf 2006) [43], have found evidence that bank lending is important for the transmission process of monetary policy. Mora (2007) [44] and (Farinha and Marques 2001) [45], in their work have found evidence that the importance of lending channel is larger for less capitalized banks. Since in transition economies many second level banks are with foreign capital, are studies that analyze the performance of lending channel in relation with the bank ownership. Arena, Reinhart, and Vázques (2006) [46] have found empirical evidence that deposits and lending rates of foreign owned banks tend to be less sensitive to changes in domestic monetary conditions. Sauza (2006), [47] have found evidence of limited degree of effectiveness of lending channel in Russian economy. Kierzenkowski (2001) [48] have found evidence that in case of Poland economy the bank lending channel may amplify but also attenuate the impact of monetary policy shocks in economy.

The level of remittances or foreign investments also impacts the effectiveness of this transmission mechanism. An important feature of Albania economy has been the high amount of remittances, which have affected various aspects of economic activity, and have constitute an important source of investments. Remittances in Albania have largely financed the start up costs for new enterprises, based on USAID estimation 70 percent of enterprises in Albania are small and have only one employee.

The informal sector in Albania is very large; according to official estimates is about one third of GDP. But research done in this field from Olters (2004, [28]), supports the idea of the existence of an informal sector larger than the official estimate. Muco, Sanfey, Luci and Harshorva (2004, [26]), have estimated that the size of the informal sector in Albania account for between 30 to 60 percent of GDP. The OECD report of year 2004 have concluded that if they include agricultural activities in Albania their estimation of informal sector moves to the higher end of the 30 to 60 percent range of GDP.

The above mentioned factors may contribute in decreasing the performance of lending channel in Albania.

3.3 Exchange rate channel

Monetary policy by changes in nominal interest rate impacts on exchange rate, this constitutes the first stage of the transmission, the second stage is pass through from exchange rate to import and domestic prices. In Albania the volume of imported good is much higher than the volume of exported good, for this is expected that depreciation of exchange rate has strong impact on domestic inflation.

There is a large literature in analyzing the exchange rate pass through in transition economies. Leitemo and Soderstrom 2001 [22], Kara and Nelson 2002 [18], Samkharadze 2008 [35], (Bardsen, Jansen and Nymoen 2003 [2]), have determined that exchange rate is important monetary feedback variable closely related to CPI inflation in open economies. In the study made for Central and Eastern European member states countries by Beirne and Bijsterbosch 2009 [3], for the whole region is found a relatively high exchange rate pass through coefficient on domestic consumer prices of about 0.6. High pass-through is investigated in countries with accommodative exchange rate policies (see Coricelli, Jazbec and Masten 2004 [8] and Masten 2004 [24]). In high dollarized transition countries like Croatia exchange rate pass through is estimated to be in low levels. Billmeier and Bonato 2002 [4], have estimated the pass through coefficient to retail price index about 0.3. Low pass through in

Tab. 2. Monetization, dollarization and financial intermediation. Source: Bank of Albania

Year	Monetization coefficient M3	Monetization coefficient M2	Dollarization coefficient of deposits M2	Dollarization coefficient of deposits M3	Deposits/GDP	Loans/GDP
2000	61.56	49.63	24.05	19.38	49.94	2.78
2001	66.8	51.72	29.16	22.57	46.63	3.87
2002	66.3	51.66	28.32	22.07	45.49	4.86
2003	64.61	50.36	28.3	22.06	46.57	5.99
2004	67.41	52.02	29.58	22.83	49.06	7.48
2005	70.32	51.84	35.64	26.28	52.11	11.06
2006	74.97	53.12	41.14	29.15	56.82	15.11
2007	77.5	51.21	51.34	33.92	61.72	21.16
2008	75.77	51.12	48.21	32.53	57.86	26.08

this country is supported empirically by Posedel and Tica 2007 [33] the main explanation for this is low inflation after the stabilization policies. Decrease of the pass through in low inflation environment is supported empirically by Ěgert and MacDonald 2006, Mihaljek and Klau 2007 [25], and Bailliu and Fujii 2004 [1]. Besides the argument of low environment in decreasing inflation some authors like (Reyes 2004 [31]), associate low pass through with inflation targeting regime of monetary policy, that is broadly used in Central and Eastern European Countries.

For Albania economy there is few empirical work that have accessed the impact of exchange rate in Albania. Muco, Sanfey and Taci 2004 [26], have found evidence that the importance of exchange rate in explaining forecast error of inflation has increased with the introduction of indirect instruments of monetary control from bank of Albania. From 23.9 percent forecast error of inflation that was explained by exchange rate during 1993M1–2000M8 has increased to about 27.5 percent for the period 2000M9–2003M12. Three empirical works done in the last years have assessed that even though exchange rate continues to be important determinant of inflation in Albania, its importance is decreasing. Peeters 2005 [29] in her study analyze the transmission mechanism of monetary policy for time period 1998M1–2004M12, have found evidence that exchange rate channel is losing its influence at benefit of other transmission channels, like credit channel. This conclusion is supported by Istrefi and Semi 2007 [17], and Tanku, Vika and Gjermeni 2007 [37].

4 The Empirical model

The empirical model is based on VAR methodology in order to assess the relative importance of different transmission mechanisms of monetary policy. The variables included in the model are inflation represented by CPI, monetary aggregate M1, repo interest rate, lending rate, credit to private sector and nominal effective exchange rate of lek domestic currency with euro and US dollar. Before use all the variables were transformed in order to account for stochastic or deterministic trends. In Tab. 5 are represented the unit root test based on augmented Dickey Fuller test. The CPI, M1, credit to private sector and nominal effective exchange rate before uses are transformed in logarithm, then in log first differences that represent a growth rate of respective variable. The interest rate were left at the levels, they appear in the model as changes.

Tab. 3. Granger test of causality. Note: The variables in rows Granger cause the variable in columns

	Δ LM1	ΔINT	ΔLNEER	ΔLCREDIT	ΔLCPI
ΔLM1	0	→	→	-	→
ΔINT	-	0	-	-	-
ΔLNEER	→	-	0	-	→
ΔLCREDIT	→	-	-	0	→
ΔLCPI	→	-	→	-	0

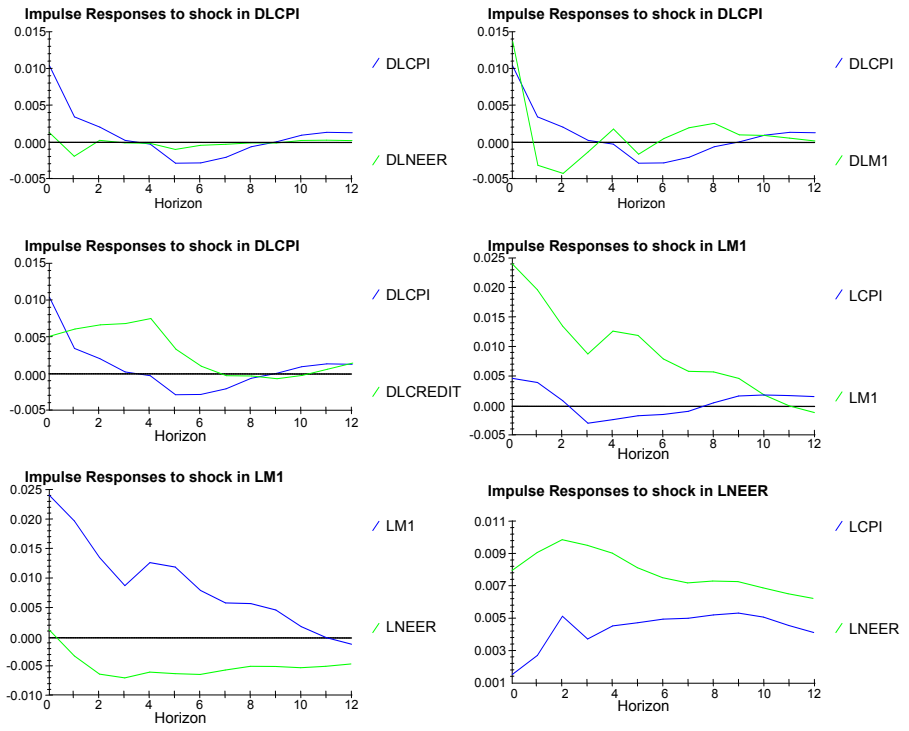
Results indicate Granger causality positively from credit to inflation. There is a bi-directorial causality relationship between money supply and inflation and between exchange rate and inflation. The causality running from CPI to M1 was stronger than vise verse. The results of granger causality are reported in Table 7.

Money growth appers to have important persistent effect on inflation. The shock in the money supply has a maximum effect on inflation after three months and dies out gradually after 8 months. A shock in the nonimal bilateral exchange rate has a maximum effect on inflation after two months, from Fig. 3 it is noticed a immediate response of inflation. This confirms the high pass-through of exchange rate on inflation in Albania that was proved by previous studies such as Peeters(2005 [29]). Increse in inflation has a intial negativ impact on credit, with a maximum impact after 5 months that dies out gradually after 8 months. Shocks in the money supply have a immediate negative effect on nominal bilateral exchange rate, with the maximum effect after 3 months, which dies out gradually thereafter.

The results of impulse response function are complemented by the variance decomposition analysis, which is represented in the following table:

The major part of inflation variance decomposition is explained by shocks of its own variable. The money supply has

Fig. 3. VAR impulse response function



Tab. 4. Variance decomposition VAR September 2000–December 2008

	Month	CPI	M1	INT	NEER	CREDIT
CPI	1	93.17	0.86	1.18	0.60	4.16
	6	67.02	11.08	4.78	7.28	7.83
	12	67.05	11.39	5.52	7.11	8.91
M1	1	26.06	89.44	0.88	6.35	12.80
	6	11.63	65.81	2.82	23.91	18.88
	12	19.21	63.91	3.05	24.18	20.02
INT	1	4.06	7.09	71.30	15.94	3.93
	6	6.19	10.32	66.07	15.87	5.35
	12	6.52	11.02	64.29	15.62	6.57
NEER	1	3.29	9.12	18.06	77.42	4.36
	6	4.01	14.13	16.83	64.30	6.46
	12	4.11	14.11	16.57	63.86	6.72
CREDIT	1	2.54	13.53	3.26	16.34	90.36
	6	7.98	16.96	5.02	21.55	79.00
	12	7.78	17.57	5.00	24.02	77.60

the maximum impact on inflation after 12 months, by explaining of about 11.39 percent of forecasting error variance of inflation. Shocks of exchange rate explain about 7 percent of variance error of inflation and shocks in credit explain about 18 percent of variance error of inflation after 12 months. If we compare our results with previous studies done for inflation determinant in Albania could be said that our results are in the same line with that generated from previous studies. Exchange rate continues being an important variable for explains the inflation in Albania, but its importance is decreasing with the development of financial sector in Albania, in favor of other channel like credit channel.

Looking at the variance decomposition of exchange rate, shows that money growth explains about 14 percent of forecast error variance in nominal bilateral exchange rate. Interest rates are an important determinant with the maximum effect after a month with about 18 percent of forecast error. Its own shocks explain the major part of forecast error of about 64 percent after 12 months.

5 Conclusion

From the analyzis of CPI basket sub-indexes in Albania it is noticed that rent fuel and power that constitute the second large sub-indexes of CPI with the weight 24 percent have been the most volatile category for time period 2000–2008, followed by food sub-indexes that have the highest weight in Albania CPI basket of about 43 percent. This sub-indexes basically are influenced by the factors that are not results of monetary policy action, such as administrated prices of energy and prices of basic food that are determined in global market.

Econometric model has found evidence that money supply is

Tab. 5. Appendix 1: Augmented Dickey Fuller Test Results. Critical value at the 5% level for the no trend test is -2.8906. Critical value at the 5% level for the trend test is -3.4552

	LCPI		LM1		LCC		LDD	
Lags	No Trend	Trend	No Trend	Trend	No Trend	Trend	No Trend	Trend
0	-2.4319	-1.9445	-0.2557	-1.7358	-0.58817	-2.103	-0.08769	-1.334
1	-2.5119	-2.2678	-0.2789	-1.8634	-0.57797	-2.1176	-0.22223	-1.5113
2	-2.4826	-2.2016	-0.2767	-1.8792	-0.57441	-2.1163	-0.27345	-1.5927
3	-2.4031	-1.9993	-0.273	-1.9339	-0.56026	-2.1461	-0.157	-1.4507
4	-2.2822	-1.6349	-0.2530	-2.2073	-0.40234	-2.3909	-0.23618	-1.5448
5	-2.2107	-1.2814	-0.2480	-2.4112	-0.37098	-2.4948	-0.37939	-1.7419
6	-2.173	-0.95156	-0.2514	-2.3878	-0.4023	-2.4768	-0.50889	-1.9611
7	-2.147	-0.72681	-0.2458	-2.5459	-0.41473	-2.4928	-0.54695	-2.049
8	-2.1199	-0.46802	-0.2439	-2.7928	-0.37872	-2.6277	-0.7631	-2.401

Tab. 6. Based on the results represented on the above table, there is evidence that the variables under survey have a random walk, the null hypotheses of unit root is not rejected in the model with eight lags.

	LNEER		REPO		INT		LCREDIT	
Lags	No Trend	Trend	No Trend	Trend	No Trend	Trend	No Trend	Trend
0	-0.31691	-0.99468	-1.2649	-0.9886	-1.2877	-1.2838	-0.51958	-1.6713
1	-0.31546	-0.92346	-1.2910	-1.0382	-1.2034	-1.0948	-0.54375	-1.809
2	-0.29375	-0.81174	-1.3299	-1.1111	-1.268	-1.2673	-0.47917	-1.6873
3	-0.31041	-0.70065	-1.3451	-1.1447	-1.2253	-1.1014	-0.40787	-1.5929
4	-0.29077	-0.47109	-1.3821	-1.2189	-1.2115	-1.0215	-0.51489	-1.8078
5	-1.0850	-0.81235	-1.4808	-1.4064	-1.2586	-1.2767	-0.53972	-1.8868
6	-1.2462	-0.79870	-1.5378	-1.5283	-1.314	-1.5348	-0.56911	-1.9941
7	-1.2442	-0.79376	-1.5536	-1.5877	-1.3691	-1.8054	-0.58007	-2.1132
8	-1.3115	-0.78661	-1.6466	-1.8005	-1.3684	-1.889	-0.60529	-2.3399

important determinant factor for domestic inflation. There is an immediate response of inflation to shocks in the exchange rate. Even though the exchange rate continues to be an important variable for explaining inflation in Albania, with the development of financial market its importance will decrease. Total loans to GDP ratio in Albania have increased substantially in the last year, and we believe that the importance of lending channel will further increase in Albania with the development of financial market.

Tab. 7. Granger Causality test results. Note: No Granger casuality is rejected at five percent where the reported F Statistic excited F critical value of about 2.45

Null Hypothesis	VAR Lag Length 4
Money growth → Inflation	F-Statistic 8.69*
Inflation → Money growth	F-Statistic 30.2*
NEER → Inflation	F-Statistic 12.24*
Inflation → NEER	F-Statistic 3.99*
REEPO → Inflation	F-Statistic 7.16*
Inflation → REEPO	F-Statistic 0.25
Interest → Inflation	F-Statistic 2.53
Inflation → Interest	F-Statistic 0.99
Credit → Inflation	F-Statistic 10.9*
Inflation → Credit	F-Statistic 0.03

Tab. 8. Test Statistics and Choice Criteria for Selecting the Order of the VAR Model. Based on akaike Information Criteria the maximum lag number is six

Lags	AIC	BIC
8	719.6144	517.0792
7	683.3219	506.1036
6	665.5021	513.6007
5	671.5312	544.9467
4	674.0819	572.8143
3	681.7842	605.8335
2	685.3096	634.6758
1	696.0556	670.7387
0	674.9076	674.9076

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